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Oct. 1st.

Vice President **Bridges** in the Chair.

Twenty-six members present.

The following papers were presented for publication :

"On the American Chilopoda, with a Catalogue of all the specimens in the collection of the Smithsonian Institution," by Horatio C. Wood, Jr.

"Description of a new species of Thelyphonus," by Horatio C. Wood, Jr.

"On the Reptiles of Sombrero and Bermuda," by E. D. Cope.

Description of a new species of Rodent of the genus Spermophilus," by J. H. Slack, M. D.

Oct. 8th.

Vice President **Bridges** in the Chair.

Twenty-nine members present.

The following papers were presented for publication :

"Description of new Cretaceous Fossils, collected by the North-western Boundary Commission on Vancouver and Lucia Islands," by F. B. Meek.

"Descriptions of new species of Cretaceous Fossils from New Jersey, Alabama and Mississippi," by Wm. M. Gabb.

Oct. 22d.

Mr. **Lea**, President, in the Chair.

Twenty-four members present.

The following papers were presented for publication :

"Catalogue of Land and Fresh-water Molluscs, collected in British North America by Messrs. Kennicott and Drexler, and deposited in the Smithsonian Institution," by W. G. Binney.

"Notes on the Molluscs of the Peninsula of California," by W. G. Binney.

"Description of two new species of Helix," by A. D. Brown.

Oct. 29th.

Vice President **Bridges** in the Chair.

Twenty-two members present.

On report of the respective Committees, the paper entitled

"On the American Chilopoda, with a Catalogue of all the specimens in the Collection of the Smithsonian Institution," by Horatio C. Wood, Jr., was ordered to be published in the Journal, and the following in the Proceedings:

Description of a new species of the genus THELYPHONUS.

BY HORATIO C. WOOD, JR.

T. stimpsonii.—Cephalo-thorax closely resembling that of T. giganteus. Cheliceres strongly curved. Their superior surface roughened by minute tubercles or granulations, the inner, pilose. The first or basal joint very wide above, armed on its inner superior margin with five irregularly radiating spines, the posterior three of which are quite small, and the third somewhat longer than the other two ; the fourth is rather larger, its length being about twice that of the third, the fifth is shorter than the fourth, but is next to it in size. The space between the fourth and fifth is greater than the intervals between the others. The inferior inner margin armed with two small spines. Second joint provided with a very minute spine on its superior, and a larger one on its inferior inner margin. The third joint has on its superior inner margin two minute spines and a long robust finger, bifid at its extremity and strongly terrate on its anterior edge. The superior inner margin of the fourth joint and both margins of its finger strongly serrate. Abdomen very similar to that of T. giganteus, but the first joint has on its lower surface a deep median semicircular depression, with a much smaller one on each side.

We have seen but a single specimen brought from Japan by Dr. Stimpson of the North Pacific Exploring Expedition.

Length of body one inch and a half, of cheliceres three quarters of an inch.

On the Reptilia of Sombrero and Bermuda.

BY E. D. COPE.

The only terrestrial animal inhabitants of the island of Sombrero, are stated* to be a centipede and a lizard. The former is the Scolopendra torquata of Wood ; the latter I propose now first entering upon the zoological record.

Ameiva corvina *Cope*.—Teeth in young and half grown specimens bicuspid posteriorly, occasionally a third cusp ; in adults a few of the posterior maxillaries and mandibulars bicuspidate, the smaller cusp antero-internal. Number 20. 5-5. 20 ; 21. 21. Head and in particular the muzzle, narrow, elongate, slightly decurved. Nostril in internasal, or nasal suture. The former plates slightly in contact medially. Fronto-nasal longer than broad ; prefrontals ditto, extensively in contact medially. Four supra-oculars, posterior very small, the suture between second and third continuous with the posterior line of the frontal plate. The latter is hexagonal, a little longer than broad ; presents a sub-rectangle anteriorly, and an obtuse angle posteriorly. Two fronto-occipitals, longer than broad, usually in contact, forming with the two occipitals on each side a series curving outwards, separated by granulations from the supra-ocular series. Interoccipital irregular, sometimes divided. Numerous small irregular plates upon the occiput. Rostral a little prolonged upon each labial suture. Superior labials six, inferior five, in contact posteriorly with two oval plates. Symphyseal and mental each broader than long ; infralabials five, anterior pair extensively in contact, the posterior separated by granulations from labials. Gular scales small, smooth, hexagonal ; those of the posterior gular fold larger than those of the anterior. Ventral plates in twelve or fourteen series, those of the external, small, rounded. Anus bordered with granules : anal plates four, large, arranged as part of a quincunx pattern, surrounded by several smaller shields. One row of large transverse anterior femoral plates, and four series of subhexagonal plates posterior and inferior to it. Exterior subtibial series of nine plates, fifth and sixth from the foot largest; inner rows three. Heel devoid of tubercles; soles uniformly granular. Scales of the tail-whorls weakly keeled. Scales of back and sides very small, smooth, rounded. An antibrachial patch of six or seven narrowly transverse shields; posterior brachial patch not defined, composed of small hexagonal scales. Palm with two small tubercles near base of external digit. Femoral pores 36 in male, 32 in female. Length of head and body to vent, 4 in. 10 l., vent to end of tail 11 in. 4 l., head to posterior gular fold 1 in. 7 l., femur (anterior) 1 in., tibia (external) 10 lin., foot with fourth digit, 1 in. 7 l.

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*Mr. J. B. Hanson, in Proc. Acad. Nat. Sci. Phil. 1859, p. 111.

Color, black; the lower surfaces tinged with glaucous green.

This addition to the numerous list of Ameivæ fills a new position in the genus. It is not closely allied to any species known to us, though its facies is much that of A. dorsalis of Jamacia. Museums Acad. Nat. Sci. (Mr. Hanson,) and Smithsonian, (Mr. A. H. Rüse.)

We are informed by Mr. J. M. Jones, in his "Naturalist in Bermuda," that a species of "Scincus" inhabits the islands, and that it is the only indigenous *true* reptile. He notices its resemblance to Plestiodon laticeps ("*S. fasciatus,*") of the United States, and gives a description of an old male specimen. The Smithsonian Institute having liberally loaned us specimens (No. 4737) obtained by Hon. J. H. Darrell, I am enabled to state its specific characters, as follows.

Plestiodon longirostris *Cope.*—Form much as in P. laticeps, the tail a little thicker, the muzzle more narrow and elongate. The anterior extremity extended forward reaches the anterior border of the orbit; the posterior reaches to beyond the appressed elbow, but not to the axilla. Rostral plate as high as broad, less depressed than in laticeps: nasal small; naso-frenal smaller, trapezoid; anterior frenal as long as high. Eight superior labial plates, the sixth and seventh bordering the inferior palpebra. Each occipital bounded by two temporals, (sometimes confluent) and a postoccipital; the anterior temporal bounded by two inferior temporals, the anterior small, the posterior larger than the eighth upper labial. Inter-occipital large, rounded posteriorly, very acute anteriorly. Fronto-parietal plates gemmiform, in contact by their inner angles. Supra oculars four; anterior supra-ocular small, barely or not in contact with the fronto-nasal. Inferior palpebra granular; a series of six to eight vertical scales beneath the marginal row. Supranasals large, considerably in contact; internasal transverse subtruncate posteriorly; fronto-nasals as long, or more frequently longer than broad, extensively in contact. Frontal elongate, in front obtuse, posteriorly acute angled. Inferior labials seven; symphyseal deeper than in laticeps; a large seven-sided mental in contact with two labials on each side, two infralabials posteriorly, and the symphyseal anteriorly. Three transverse infralabials on each side, the anterior not separated by a postmental. Three slightly prominent granules upon the superior part of anterior auricular border. Digits compressed; of the posterior the fourth has twice the extent of the fifth. Sole tuberculous externally and internally; medially granular; palm tuberculous posteriorly. Scales small, especially upon the sides; rows from 39 to 42. Preanal plates four, the median pair very large, the exterior very small. Total length 6 in. 6 lin., tail 3 in. 9 lin. Color above, from rusty to ashy brown, paler on the tail. A white line commences at the anterior angle of the orbit, and extending above the latter, reaches as far as the crural region. It is margined with black superiorly, and separated from that of the opposite side by eight rows of scales. Beneath it, the sides are black or brownish for a width of three and a half scales, beneath which shade is another narrow white line, extending from beneath the orbit to the groin. The dark color of the sides extends upon the tail for one-third its length. The under surface of this member, of the extremities and belly, greenish blue; throat and chin yellowish. In younger specimens a light line upon each canthus rostralis is analogous to those which unite and form the median dorsal band in P. laticeps.

There are nearly ten more rows of scales in this species than in P. laticeps; the latter has six preanal plates, of which the median pair is not so disproportionately large; also the frenals and nasofrenal are narrow and erect.

Description of a new Species of Rodent of the Genus SPERMOPHILUS, from Texas.

BY J. H. SLACK, M. D.

Spermophilus Buckleyi, n. s.—Size about equal to that of the Sciurus cinereus. Neck, limbs, sides and posterior half of body, grizzled white and black, the hairs being black at the base and annulated with broad bands of black and yellowish white; a broad black patch commencing at the tip of the nose, covering the shoulders and terminating in a point at about the tenth dorsal vertebra, tail about two-thirds the length of the body, covered with long annulated hairs. Ears small. Soles naked.

Measurements from the dried skin.—Body, 13 inches; tail to end of vertebræ, 7·5; to end of hairs, 11; hind feet, 2·3. Length of lower jaw, 1·5.

Habitat. Pack-saddle Mountain, Llano Co., Texas.

This curious Spermophile was presented to the Academy by Mr. S. R. Buckley, of the Texas Geological Survey. It was captured alive by one of his party, and kept by Mr. Buckley for some time as a pet. He describes it as very gentle and docile. Its favorite food was acorns, green oak balls and milk; of the latter it appeared extremely fond. Its voice he describes as similar to the chirping of a young robin. This species is quite abundant in the vicinity of Pack-saddle Mountain. It is gregarious and resides in the holes and clefts of the rocks. When alarmed it runs along the faces of the almost perpendicular cliffs with great agility, its body, from the shortness of its limbs, appearing to touch the ground. The specimen as presented is unfortunately in a very bad condition, consisting of a flat furrier's skin apparently much distorted, and the lower jaw.

Descriptions of new Cretaceous Fossils collected by the North-Western Boundary Commission, on Vancouver and Sucia Islands.

BY F. B. MEEK.

The fossils described in this paper are the new species contained in the collections of the North-Western Boundary Survey. Full illustrations, and more extended descriptions of these and other species formerly described by the writer, from Vancouver Island, will appear in the Report of that Survey; which will also contain a report by Mr. George Gibbs, geologist of the expedition, on the general geology of the country along the boundary line.

In 1857 I announced the discovery of Cretaceous rocks on Vancouver Island, in a paper published in the fourth volume of the Transactions of the Albany Institute. The species described in that paper, as therein stated, were evidently from two distinct rocks, one of which was unhesitatingly referred to the Cretaceous system; while the other,—owing to the fact that all the specimens obtained from it belonged to new species, of genera common to the Cretaceous and Jurassic,—was regarded as doubtful, though probably also of cretaceous age.

A subsequent examination, however, of these last mentioned specimens, (from Nanaimo, on Vancouver Island) led me to suspect from the affinities of some of the species, that they might be Jurassic, which was stated in a letter to Dr. Newberry, who mentioned it in his report on the Geology of Capt. Williamson's Pacific Rail Road Survey.

A careful review of the subject, with the aid of the more extensive collections brought in by the Boundary Survey, fully establishes the correctness of my first suggestion in regard to the Cretaceous age of the doubtful beds at Nanaimo. The species from the other rock referred at first to the Cretaceous, although sent to the Smithsonian Institution mingled with others from Nanaimo, are now known to be from Komooks, a locality some seventy miles north-west of Nanaimo, on the eastern shore of Vancouver Island.

Of these two Cretaceous formations, that at Nanaimo is apparently the older; while the deposits on Sucia Islands, (a small group in the Gulf of Georgia, about seventy miles south-east of Nanaimo) belong to the same horizon as the Komooks beds.

Descriptions of Species.

LAMELLIBRANCHIATA.

INOCERAMUS SUBUNDATUS.—Shell (left valve) broad ovoid or subcircular in outline, rather compressed; anterior margin rounding regularly from near the beaks into the base, so as to form with the latter a semicircular curve; posterior side rather irregularly rounded, its most prominent part being near the middle, hinge margin straight, equalling about half the entire length of the shell; and ranging at an angle of near 55° above the axis of the umbonal prominence; beak occupying a position nearly over the anterior margin, rather small, and rising little above the hinge. Surface ornamented by moderately distinct, regular concentric folds, which are stronger on the most convex part of the valve, and become nearly or quite absolute around the free borders. The outer fibrous layer (which is exfoliated from the specimens examined) is, doubtless, marked also by concentric striæ.

Length, 3·45 inches; height, 2·94 inches; breadth or convexity about 0·75 inch.

This species resembles *I. Barabini* of Morton, (specimens of which are contained in the North-Western Boundary collections from Sucia Island in the Gulf of Georgia.) It differs, however, in being more compressed than the corresponding valve of that species. It is also much less regularly rounded posteriorly, and the curve of its concentric folds is different. It may be distinguished from *I. Vancouverensis* of Shumard, by having its beak very much less gibbous, and less prominent.

Locality. Komooks, eastern shore of Vancouver Island.

DOSINIA? TENUIS.—Shell circular, or very slightly oval, extremely thin, and much compressed; lateral and basal margins regularly rounded, and very thin and sharp; beaks small, compressed, central, and projecting little above the dorsal margin; lunule small and rather deep; surface marked by fine concentric striæ.

Length and height each 1·26 inches; convexity about, 0·22 inch.

As neither the hinge, nor the interior of this species has been seen, it is only referred provisionally to the genus *Dosinia.* It has much the appearance of a *Lucina*, but casts of the anterior muscular scar visible on some specimens, show these impressions to differ from those of *Lucina.* It seems to be closely allied to *Dosinia lenticularis* (*Artemis lenticuluris*) of Forbes, from the Cretaceous at Pondicherry, Southern India, (Trans. Geol. Soc. Lond. vol. vii. pl. 18, fig. 7.)

Locality. Nanaimo, Vancouver Island.

MACTRA GIBBSANA.—Shell transversely oval, or subtrigonal, moderately convex, rather thin; anterior side narrowly rounded; base forming a regular semi-elliptical curve; posterior side slightly truncated at the immediate extremity, abruptly rounded or subangular at its connection with the base below; dorsal outline sloping from the beaks in front and behind, at an angle of about 120°; beaks central, rather elevated, but small, and not projecting much above the hinge margin; surface marked only by moderately distinct lines of growth. Posterior muscular impression oval, well defined; pallial line distinct, and provided with a rather deep, horizontal sinus, about one-third longer than wide.

Length, 2·04 inches; height, 1·50 inches; breadth or convexity, 1 inch.

Mr. Conrad has described a *Mactra* similar to this, under the name of *M. albarea*, from the Tertiary rocks on the Columbia River. (Am. Jour. Sci. vol. 5, sec. ser. p. 434.) The species before me, however, is proportionally longer transversely, and less gibbous. It also differs in being destitute of a distinct angle down the posterior umbonal slopes.

The specific name is given in honor of Mr. George Gibbs, the geologist of the North-Western Boundary Survey.

Locality. The specimens were all found in a loose piece of hard greenish gray sandstone, on the Straits of Fuca; and I have been unable to determine whether they belong to the Cretaceous or Tertiary epoch. I incline to the opinion, however, that they belong to the latter.

CEPHALOPODA.

BACULITES INORNATUS.—Shell of medium size, straight, very gradually tapering, and moderately compressed; section and aperture regularly ovate, the ventral side being a little more broadly rounded than the dorsal; lip deeply sinuous on each lateral margin, near the ventral side, and provided with a long linguiform extension on the dorsal margin, while its ventral edge presents a nearly semicircular outline. Surface entirely destitute of costæ, nodes, or undulations; lines of growth moderately distinct, and curving gracefully parallel to the prominences, and deep sinuosities of the lip.

The largest fragment of this species in the collection measures 1·49 inches in its greater diameter, and 1·13 inches in its smaller, and judging from its very gradual taper, appears to have been, when entire, as much as 15 or 16 inches in length. It differs from *B. ovatus* of Say, in being entirely destitute of undulations, at all ages, and in being usually smaller, and proportionally more slender. It also presents differences in the details of its septa, lobes and saddles, which, however, cannot be clearly explained without the use of figures.

Locality. Sucia Island, Gulf of Georgia.

BACULITES OCCIDENTALIS.—*Baculites ovatus* (Say?) Meek, 1857, Transactions Albany Inst. vol. iv. p. 48.

Shell straight, and very gradually tapering; section subtrigonal towards the larger end, but becoming more nearly ovate towards the smaller extremity; ventral side flattened, ventro-lateral margins angular; sides converging with a slightly convex outline from the ventro-lateral angles, to the very narrowly rounded, or obtusely angular dorsum; aperture subtrigonal; ventral projection of the lip nearly semicircular; that of the dorsal side much longer, somewhat wedge-shaped, but a little rounded at its narrow extremity; lateral sinuses of the lip rounded, with a long, nearly straight, oblique margin on the dorsal side. Surface ornamented with rather small, regular undulations or costæ, extending across from the ventro-lateral angles to, or beyond, the middle of each side, with a regular curve parallel with the margins of the lateral sinuses of the lip; fine regular lines of growth are also seen traversing the shell parallel to the dorsal and ventral projections, and lateral sinuosities of the lip.

The specimens examined are all too imperfect to give accurate measurements, but so far as can be determined from the taper, of those most nearly entire, an individual measuring 1·45 inches in its greater transverse diameter, and one inch in its smaller do., near the aperture, must have been about 14 to 16 inches in length.

The peculiar flattening of the ventral side of this species, is a character that will at once distinguish it from any other *Baculite* with which I am acquainted.

This character, however, is not always so distinctly marked near the smaller extremity, as along the larger half of the shell, where it imparts to the transverse section a trigonal outline. In the form of its septa lobes, it is more nearly related to *B. compressus* of Say, than to *B. ovatus* of that author, though its form alone will readily distinguish it from either of these species.

At the time I published the paper on some Cretaceous fossils from Vancouver Island, cited at the head of this description, only a few fragments of this species were in the collection examined. Thinking the flattening of the ventral side of these probably due to accidental pressure, I referred them provisionally to *B. ovatus* of Say. At the same time, however, I suspected they might belong to a distinct species, and suggested for it, in case farther comparisons should prove it to be new, the name *B. occidentalis*, which is here adopted.

Locality. Komooks, eastern shore Vancouver Island.

AMMONITES COMPLEXUS var. SUCIAENSIS.—*Ammonites complexus*, Hall & Meek, 1856, Mem. Am. Acad. Arts and Sci. vol. 5, new ser. pl. 4, fig. 1, a. b.

This shell agrees almost exactly in form with *A. complexus*, excepting that it is more compressed, its volutions being distinctly narrower transversely, in proportion to their diameter from the dorsal to the ventral side, than in that species. In its septa, it agrees very closely also with *A. complexus*, the differences observable being apparently such as may be due to the larger sizes of the specimens of the form under consideration.

The largest specimen in the collection is from Sucia Island. It is an internal cast, and so much worn as to obliterate much of the details of the lobes and saddles. It consists entirely of septate whorls, the outer non-septate portion having been broken away. In its greatest diameter, it measures 4·60 inches, and 1·90 inches in breadth or thickness.

It is possible this shell may prove to be specifically distinct from *A. complexus*, but with my present means of comparison I do not feel fully warranted in separating it.

In the number, arrangement, and mode of branching of its septa lobes, as seen in some of the smaller sized specimens from Komooks, it is also very closely allied to *A. Gollevillensis*, of D'Orbigny (=*A. Lewisiensis*, D'Orb. Pal. Fr. tome 1. Cret. pl. 101, non Sowerby); though it is a more ventricose shell, and wants the dorsal groove so characteristic of that species. Its costæ also differ in being more strongly defined on the inner half of the whorls.

Locality and position. Sucia Island, and at Komooks on Vancouver Island.

AMMONITES VANCOUVERENSIS.—Shell discoid; volutions increasing rather gradually in size, strongly compressed on the sides, and flattened on the narrow dorsum, nearly twice as broad from the dorsal to the ventral side, as the transverse diameter,—rather deeply embracing; umbilicus of moderate depth, about half as wide as the greater diameter of the outer whorl; aperture (as inferred from a section of the outer whorl) compressed cordate. Surface ornamented by a row of compressed nodes along each dorso-lateral margin, and another of smaller size around each umbilicus; about twenty of the first, and ten of the latter, may be counted on each side of an entire turn.

The flattened sides between the dorsal and ventral rows of nodes, are provided with obscure, slightly arching, transverse costæ, one of which extends from each of the umbilical nodes towards the dorsal margin, but all become obsolete before reaching it. Between each two of these principal costæ, one or two more very obscure ones are seen, which do not reach either the dorsal or ventral margins.

The specimen from which the foregoing description was made out, consists of about the half of one volution, most of which is non-septate. When entire, the shell must have measured about 3·85 inches in its greatest diameter, and near 1·13 in breadth at the aperture. It seems to be closely allied to *A. Leopoldianus*, of D'Orbigny (Pal. Fr. Ter. Cret. t. 1, pl. 22, 23) but differs from

D'Orbigny's figures (on pl. 23) in being more compressed near the dorsum, and in having only about half as many nodes around its dorsal and ventral margins. It also differs in having scarcely any traces of costæ near the dorso-lateral nodes (where they are strongest on D'Orbigny's figure just cited) while they are strongest near the middle of its sides.

Locality. Komooks, eastern shore Vancouver Island.

Nautilus Campbelli.—Shell large, subglobose, or somewhat oval in form, moderately convex; dorsum and sides rounded, or very slightly compressed; volutions increasing rather gradually in size, deeply embracing within, and rounding into the umbilicus on each side; umbilicus very small, but not quite closed; septa separated by spaces less than one third the transverse diameter of the whorls at the point of measurement, and arching slightly backwards on the sides and dorsum; aperture nearly circular, but deeply sinuous on the ventral side for the reception of the inner whorls. (Siphuncle and surface markings unknown).

Length or greatest diameter, 4·83 inches; breadth or transverse diameter at the aperture, 3·07 inches.

This species is more nearly like *N. Clementinus* of D'Orbigny, (Pal. Fr. Ter. Cret. tome 1, pl. 13 bis) than any other with which I am acquainted. It differs, however, in having a more rounded aperture, and a more broadly rounded dorsum, the entire shell being less compressed.

It may be at once distinguished from *Nautilus Dekayi* of Morton, which probably also occurs in the Cretaceous beds of Vancouver's Island, by its much more compressed form, and consequently narrower aperture, as well as by its slightly open umbilicus,—that of *N. Dekayi* being entirely closed at all ages. Its whorls are likewise more compressed on the sides, and more concave in the region of the umbilicus.

The specific name of this fine *Nautilus* is given in honor of Mr. Archibald Campbell, the commissioner in charge of the North-West Boundary Survey.

Locality, same as last.

Description of New Species of Cretaceous Fossils from New Jersey, Alabama and Mississippi.

BY W. M. GABB.

The following species are described from specimens, either in the collection of the Academy of Natural Sciences, or in my own. The types are mostly in the shape of casts, but are all undoubtedly distinct. It is an unfortunate circumstance, that, except in the Ripley Group, this formation, east of the Mississippi, rarely yields the shells of the species. In fact, the study of cretaceous fossils, in this region, is to a great extent, a study of internal casts. The Pectens, Oysters, Belemnites, and some other genera, are usually exceptions to this rule; though, sometimes, we find striking instances in which the shells of other genera are beautifully preserved. The following descriptions are preliminary. Fuller descriptions and illustrations will be published hereafter.

Actæon Montf.

A. cretacea.—Subglobose, spire elevated, whorls five, convex (in casts) and sloping on the sides, obliquely truncated above. Body whorl sub-compressed, most convex above, width about equal to the length of the mouth. Mouth narrowed above, wide below, rounded anteriorly. Two folds on the columella; the upper one heavy and rounded, lower or anterior one, obsolete. The columellar edge of the body whorl in one of the casts is marked by acute-angular striæ, one branch extending directly upwards on the outside of the whorls (inside of the shell), and soon becoming obsolete; the other branch runs into the columellar cavity.

Length about 1 inch (when perfect), width of body whorl ·6 in.

From Crosswicks, N. J. My coll. from Dr. Slack.

Resembles *Solidula bullata* nobis, (*Tornatella id.* Morton), but is a smaller species, the spire is higher, the whorls are more flattened on the sides, and truncated above, and from a cast of the surface, we believe the exterior to be smooth, while on Morton's type, an internal cast, distinct revolving lines are visible.

A. ovoidea.—Elongated ovoid, spire high, number of whorls uncertain, flattened, carinate (in casts) on their upper edge. Body whorl regularly, but very gently convex. Mouth longer than the diameter of the body whorl; acuminate above, rather narrow to beyond the middle, gradually widening and rounded in advance. One large fold on the columella with a broadly rounded one, not prominent, in advance of it. From faint signs on the surface, there can be detected traces of apparently rather broad longitudinal ribs and revolving lines.

Length of body and preceding whorl 1 in., total length, perhaps, about 1.25 in. Width of body whorl, ·6 in. Length of mouth, ·8 in.

Found with the preceding and presented to me by my friend Dr. Slack.

These two species, with most, if not all of the New Jersey specimens here described, are from the second division of the cretaceous, following the New Jersey Geological Reports. It is the same deposit as that at the deep cut of the Delaware and Chesapeake Canal from which Dr. Morton obtained Scaphites hippocrepis and many other species. It seems to be the richest of the three divisions in species.

The present species can be distinguished from the preceding one by the proportionate length of the mouth and narrowness of the body whorl, and the acute upper edge of the whorl. The difference in the columella folds cannot be satisfactorily pointed out without a figure.

GLOBICONCHA d'Orb.

G. curta.—Subglobose, spire exsert, but short, nearly equal in height to the length of the mouth. Whorls four (or five ?), rounded. Body whorl tumid. Mouth acuminate above, broadly rounded below. Surface ? (a cast.)

Length, ·75 in. Width of body whorl, ·6 in. Length of mouth, ·45.

A cast from the cretaceous limestone of Comanche Peak, Texas, in my collection. Presented by Dr. Moore, the State geologist of that State.

This may be a short, tumid species of *Phasianella*, but these two genera approach each other so closely in some of the forms, that it is impossible to decide from a cast. It does not resemble any of the species heretofore described in this country. P. (*Globichoncha*) *tumida* has a high spire. G. *elevata* is still further removed. It approaches most nearly to G. *planata*, Rœm., but independent of the difference in size, the spire is proportionally much higher, the mouth is narrowed above and is produced, regularly rounded below, without having the oblique truncation upwards shown in Rœmer's figure. The body whorl is equally prominent, but is regularly rounded.

NATICA Adanson.

N. infracarinata.—Gibbous, spire low; whorls three; rapidly increasing in size, rounded, compressed above, angle of the whorl round, surface of about the same convexity as *N. abyssinis.* Lower angle of the whorl, at the edge of the umbilicus, usually strongly carinate in the casts, sometimes rather faintly. Umbilicus patulous, perspective; open probably to the extreme spire. Mouth elongate, rather narrow, broad above, and acuminate at the lower extremity. Surface of the shell in the umbilicus striate transversely to the direction of the whorls, and marked by a small revolving line. Outer surface unknown.

Height, 1·20. Width of body whorl, 1·25. Length of mouth, 1 in.

From the same formation, in N. J., as the preceding species of Acteon. My Coll., and Coll. Acad.

Closely related in general form to *N. abyssinis.* The measurements are somewhat different. Dr. Morton's type measures, Height, 1 in. Width of body whorl, 1·30 in. Length of mouth, 9 in. The most obvious difference is in the shape of the lower edge of the whorls. In *N. abyssinis* only known from casts, it is regularly rounded. In this species it is carinate. The species may prove to belong to the genus *Gyrodes* Con., on account of the wide umbilicus, apparently without a callus, and the flattened top of the whorl.

LUNATIA Gray.

?L. altispira.—Elevated subglobose. Spire rather high; whorls four, rounded, abruptly truncated or concave above. Body whorl gibbous. Mouth broad, rounded. Umbilicus (in casts) small, perforated rather deeply. No markings on the casts.

Length, ·8 in. Width of body whorl, ·7 in. Length of mouth, ·6 in.

Found with the preceding. My Coll., Coll. Acad.

Approaches most nearly to *L. rectilabrum* = *? L. concinna* H. & M., but can be at once distinguished by the abruptly truncated superior edge of the whorl. This character relates it to, if it will not place it in the following genus.

GYRODES Con.

? G. obtusivolva.—Shell subglobose; spire somewhat elevated; whorls three, abruptly truncated above, where they are flat or concave with the angle acute. Body whorl gibbous, sloping below. Mouth biangular above, broadly rounded below. Umbilicus narrow, deeply perforate in casts. Surface marked by close irregular oblique striæ.

My Coll., from Mr. Abbott, n. g.

Length, ·8 in. Width of body whorl, ·8 in. Length of mouth, ·55 in.

Approaches in form the preceding species, but is a more robust shell, the truncations of the body whorl is much broader and more abrupt, and the surface is distinctly striate by lines of growth. The umbilicus appears broader, but this may be merely an individual character.

The genus *Gyrodes* will probably have to be extended to receive a number of forms, having all the other characters as described by Mr. Conrad, but with a narrow umbilicus.

Unfortunately, we are unable to determine positively, whether or not there was a callus in the umbilical cavity of this species. Could we determine that point, we might be able to settle the bounds of the genus.

G. Spillmanii.—Shell wide, spire low; whorls three, oblique on the sides, truncated above. The truncation is at times flat, sometimes concave; angle generally acute. Mouth biangular above, obliquely expanded below. Umbilicus broad, open, margin subcarinate.

Height, ·7 in. Width of body whorl, ·85 in. Length of mouth, ·55 in.

Two specimens (casts) from the cretaceous limestone of Mississippi, in the collection of the Academy, presented by Dr. Spillman. Closely related to *Gyrodes* (*Natica*) *petrosa,* which is found in the same locality, but differs in the outer edge of the mouth being much less obliquely expanded, the surface of the whorls being much more nearly parallel with the longitudinal axis of the shell than in that species. The umbilicus is probably larger, but it expands at a much smaller angle. *G. petrosa* has much the outline of *Sigaretus.* This is nearer the usual form of the true *Naticas.*

G. Abbotti.—Shell subglobose, spire low, hardly elevated above the upper edge of the body whorl. Whorls three? (partly covered in the middle by matrix) rapidly increasing in size. Section of body whorl (= curve of the outer lip) nearly semicircular. Upper surface of the whorls flattened, but not truncated, nor carinate in the casts, marked by numerous oblique plications; surface markings unknown. Umbilicus large, dilated, merging by a rounded edge, without any carination, into the external surface. Mouth rounded, widest near the lower extremity.

Height, 1·5 in. Width of body whorl, 2 in. Length of mouth about 2·3 in.

This is probably the largest of the *Naticidæ* in the American Cretaceous, east of the Mississippi. It exceeds the finest specimens of *Gyrodes* (*Natica*) *abyssinis*, I have ever seen, in size.

I am indebted for the only known specimen to my friend, Mr. C. C. Abbott, who has added many rare and valuable specimens to my collection from the N. Jersey marl beds. The specimen is from Mullica Hill, from the shell bed at the top of the hill, known to every collector at that locality.

From *G. crenata*, Con., it can be distinguished by the base of the body whorl being broadly rounded. From *G. alveata*, Con., by the smaller number of whorls to a shell twice the size of the type of that species, by the oblique plications and absence of a carina on the shoulder of the whorl.

TURBINOPSIS Con.

T. depressa.—Flattened; spire low; whorls three, rounded and rather widely separated in casts, indicating a thick shell; slightly channelled at the suture. Mouth elliptical longitudinally, acute below, the lower edge of the whorl very strongly carinate, with the cast of a revolving rib on the lower edge of the inner lip, and on the outer side of the carina are faint depressions at about an eighth of an inch apart, indicating a periodical tooth. These are faint or absent in the small specimens, but quite marked in the largest one before me. Umbilicus patulous, perspective.

Not very rare in the cretaceous at Crosswicks, N. J., and at the Delaware and Chesapeake Canal. My Collection from Dr. Slack, and Coll. Acad.

Height (of largest specimen) ·85 in. Width of body whorl, 1 in. Length of mouth, ·6 in.

I at first considered this genus as a synonym of *Cancellaria*. On more careful examination, I believe it to be very distinct. It seems to be more nearly related to *Ninella* of Gray. It has the same general form, but differs in the lower edge of the mouth being acute, with a revolving rib or tooth near the base on the inner lip.

Cancellaria Alabamensis, nobis, must be placed in this genus.

The present species can be distinguished by the extremely flattened form, the other species have remarkably high spires, compared with it.

TROCHUS Linn.

T. Mortonii.—Shell conical, spire elevated; whorls four, probably five, increasing very gradually in size obliquely flattened on the sides, and marked by very faint undulations, probably indicating longitudinal ribs on the shell; lower edge of whorls angulated, under surface nearly flat; mouth obliquely subquadrate; umbilicus ?

Height, ·75 in. Width of body whorl, 1 in. Height of mouth, ·4 in.

From the white cretaceous limestone of Ala. Coll. Acad.

There are two specimens in the collection; one of them, with the sides of the whorls almost perfectly straight, has the trace of a small revolving rib or tooth near the inner angle of the mouth on the lower lip. It may belong to another species.

T. Mortonii resembles most nearly *T. Marrotianus*, d'Orb., in its general form, except that it is a shorter shell proportionally and the umbilicus is closed, or nearly so. The casts also exhibit traces of longitudinal ribs or undulations, which do not exist in the latter species.

ARCHITECTONICA Bolt.

A. Abbottii.—Discoidal, spire low; whorls four, truncated above, obliquely flattened on the sides ; inferior angle carinate ; lower surface broadly convex. Mouth obliquely subquadrate. Umbilicus of ordinary proportions and perspective. Umbilical surface of whorls rounded. Surface marked by small but well marked revolving and longitudinal depressed lines, producing a cancellated appearance.

Height, ·8 in. Width of body whorl, 1·4 in. Height of mouth, ·5 in. Transverse width of mouth, ·65 in. (about)

My collection ; locality, Mullica Hill ; from Mr. Abbott. Several specimens in the Collection of the Academy from Timber Creek, N. J., with surfaces entirely obliterated. One specimen, also, in the Collection of the Academy, seems, from its lithological character, to have come from the white limestone of Prairie Bluff, Ala.

This shell is of the general form of *Pleurotomaria perspectiva* Sow., as figured by d'Orb., Pal. Fr. vol. 2, pl. 186, but is always smaller, not as high proportionally ; the lower angle of the body whorl is more acute, and the markings are different.

From *A. crotaloides* (*Cirrus id.* Morton, *Pleurotomaria id.* d'Orb, Auct.) it can be distinguished by the higher spire, and flattened, angular whorls. The surface markings of the latter species are entirely unknown.

FASCIOLARIA Lam.

F. Slackii.—Elongated fusiform; spire turrited, about as high as the mouth. Whorls five ? (the upper one is broken off, but from the width of the spire at that point, there must have been at least one volution in addition to the four in the specimen.) Upper whorls prominent in the middle, sloping gently upwards to the upper edge, which is so flattened as to indicate that the suture must have been plain, not impressed, body whorl sloping from the broad rounded shoulder, gently into a long, somewhat broad canal. Mouth acute above, rapidly widening for a short distance and then gradually narrowing. Surface marked by numerous undulating longitudinal ribs, passing straight down or obliquely backwards from the suture to the shoulder of the whorl, on which they change their direction, being inclined forwards and downwards with a regular curve, losing themselves in the general surface, or extending to the end of the canal. One very distinct, oblique rib on the middle of the columella.

Length of the specimen, containing four whorls, 1·2 in. Width of body whorl, ·6 in. Length of mouth, ·7 in., (perhaps, when perfect, ·75 or ·8 in.

Found with the two species of Actæon, described above. My collection, from Dr. Slack.

Resembles in form, *Fusus exilis* Con., (Median Tert. pl. 49, f. 4,) from the Miocene, but is smaller, the shoulder of the whorls is somewhat more strongly marked, and the ribs are closer together than those of the costate variety of that species.

VOLUTA Linn.

V. (Fasciolaria?) Delawarensis.—Low fusiform ; spire slightly elevated ; whorls five, flattened and sloping above, marked on the angle by obtuse tubercles, twelve on the body whorl, which extend in the shape of rounded ribs, or mere undulations, about half the length of the whorl, losing themselves in the surface. Mouth subangular above ; upper inner edge at nearly a right angle to the inner lip ; outer lip, at first gently curved outwardly, and afterwards gradually approaching the anterior end with nearly a straight line. The greatest width of the mouth appears to have equalled about a third of its length. One heavy oblique fold on the columella.

From the Delaware and Chesapeake Canal. Coll. Acad.

This species is described from three casts in the Collection of the Academy. They exhibit traces of the lines of growth, and of small regular revolving ribs.

There may have been another fold on the columella, but, from the condition of the specimens, I could not decide certainly. From the imperfect condition of the specimens of this magnificent species, I could not determine positively in which of the two above genera to place it. Its general form seems to relate it most nearly to the *Athleta* group of the Volutes.

Length, (broken) 2·75 in. Width of body whorl, 2·2 in. Length of mouth, (broken) 2·25 in.

V. Kanei.—Shell small, fusiform. Spire elevated; whorls 3—3½, rounded. Body whorl broadly rounded above, tapering below. Mouth elongate, acute above, slightly widened in the middle and narrowed below. Columella with two small oblique folds, the posterior one almost linear. Surface of casts perfectly smooth; but on casts of the surface, I have found impressions of a few rather prominent longitudinal ribs, crossed by numerous distinct revolving lines. I have not ascertained how far these extend over the surface, having traced them only on the upper third of the whorls.

Length, somewhat broken 1·1, probably 1·25 or 1·3. Width of body whorl, ·55. Length of mouth, ·7, perhaps when perfect, ·75 or ·8 in.

From N. J. My Coll., named after Mr. Chas. Kane of N. J., an enthusiastic and able collector, and one to whom I am indebted for some valuable additions to my collection.

This species resembles most nearly *V. bella*, nobis, but is a shorter and more robust shell, with the upper volutions diminishing more rapidly in size.

V. mucronata.—Shell turrited. Spire high; whorls four or five, rounded and increasing very gradually in size. Aperture elongate, narrow, acuminate above. Columella with three small folds, the anterior, largest; other two linear. Surface marked by broad longitudinal ribs and small distinct revolving lines.

Length of most perfect specimen (three last whorls), 1·3 in. Width of body whorls ·55 in. Length of mouth about ·75 in. (imperfect). Two casts in my collection; locality Crosswicks, N. J., from Dr. Slack. Of the same type as *V. Texana* and *V. nasuta*, this species differs from both in the much more gradual increase in size of the whorls, there more rounded form and the shorter mouth. This character will serve to separate it without doubt from the latter, and the additional character of the very few and delicate columella folds renders the distinction from the former certain, independently of the great difference in shape.

TEREDO Linn.

S. G. Uperotis Guett. ?

T. contorta.—Tube short, knotted, increasing rapidly and irregularly in size, and bent at two right angles in the only specimen I have seen. Shell gibbous, beaks incurved; umbones prominent, in cast, and marked by a deep angular groove, extending to the margin and inclined a little anteriorly. Anterior basal margin excavated by a deep angular notch, occupying about half the longitudinal diameter of the shell, and joining the basal margin by a short curve at or near the point where the umbonal groove reaches the edge. The extreme anterior end is buried in the matrix, but, from the direction of the surface lines, is probably acuminate. Posterior end produced rounded and slightly gaping. Surface marked by fine lines at the anterior end, which extend posteriorly, and end abruptly in a line with the posterior edge of the emargination. From this line extends a series of much finer lines running transversely with the direction of the first, being parallel with the edge of the emargination, and abruptly curving posteriorly, immediately in advance of the umbonal groove, across which are larger and less numerous lines, these again became smaller, being about as large, but less distinct than the most anterior set, and run parallel with the basal and posterior margins.

One specimen in my collection, from Burlington Co., N. J.

Total length of tube about 1.75 in. Greatest diameter ·5 in. Length of shell about ·25 in. Width about 3 in.

The surface markings are about exactly like those of *Xylophaga Stimpsonii* M. & H., but the beaks are more prominent and the crenulations along the vertical furrow, extending from the beak, are much finer and more numerous. It is less oval in form than *Pholas* (*Xylophaga*) *elegantula* M. & H. The gaping appearance of the posterior end may be due to the peculiar position of the shell in the matrix. If it should prove to be closed, the species will belong to the genus *Xylophaga.*

PHOLAS Linn.

P. cretacea? *Gabb.*—Jour. Acad. 2d s. vol. 4, p. 393, pl. 68, f. 18.

Shell broadly cuneate, beaks very much incurved. Umbones broad; buccal extremity rather abrupt, convex. Cardinal margin rounded, sloping downwards towards the anal end, which is rather broad. Basal margin nearly straight, perhaps a little emarginate. Surface marked by a deep groove extending a little obliquely backwards from the beaks to the basal edge. In advance of this are curved striæ, very distinct and parallel, or nearly so, with the margin, which, immediately on crossing the groove, become straight. From a very small fragment of the shells attached to the cast, we find that between these grooves are small sharp ridges.

Length ·21 in. Width ·32 in. Diameter ·2 in.

This small shell, of which I have seen but one specimen, is referred provisionally to the above species, described only from the tubes, because it is of about the proper size to form such tubes, is found in the same deposit, and is the only species known in the New Jersey deposits, except *P. cithara* Morton, which is about an inch in length. The specimen is from Burlington county, and is in my collection. It is so injured by pyrites, that I cannot ascertain how far the lines, described above, extend posteriorly. They seem, however, to continue parallel with the edge. The shell is less truncated in advance than *P. cithara*, the type of which is in the Academy's collection. The figure given by Dr. Morton is scarcely recognizable. In his specimen the posterior extremity is very narrow and the anterior end is very abruptly truncated, and not produced as in the figure. Mr. Conrad's figure of the same species, under the name of *P. pectorosa*, in the Journal of the Academy, 2d s. vol. 2, pl. 2, fig. 9, will convey a better idea of the species.

ANATINA Lam.

A. elliptica.—Shell subelliptical, equivalve, nearly equilateral; beaks central, pointing posteriorly, very small, umbones small. Cardinal margin slightly convex. Buccal margin broad, nearly straight and sloping inwards towards the basal edge, which is very broadly rounded, being nearly straight just opposite the beaks. Anal extremity hardly more than half as broad as the buccal, and with the hinge line between it and the beaks, regularly concave. There is a broadly rounded ridge extending from the umbones towards the anterior basal margin, gradually becoming obsolete as it approaches the edge. Shell thin, and marked on the surface by small, irregular concentric ridges.

Length ·9 in. (from beaks to basal margin). Width 1·3 in.

Locality, Mullica Hill, N. J., collected, with a number of other fine specimens, by Messrs. Abbott and Kain.

VENILIA Morton.

V. trigona.—Shell very oblique. Beaks very prominent, anterior, almost terminal, incurved, umbones small, umbonal ridge prominent, subangular slightly rounded on the edge, and extending to the extreme posterior basal angle of the shell. Basal margin nearly straight on the posterior half, regularly rounded from the middle to the anterior extremity of the hinge line. Anal margin, lower third, at about a right angle to the basal edge, upper portion curved as it passes the muscular scars, and straight, inclined anteriorly beyond, until it reaches the hinge line. Hinges composed of the characteristic teeth, but very robust. Anterior muscular scars very deep, posterior, hardly visible.

Length 1·6 in. Width 1·9. Transverse diameter 1·5 in.

Locality, Boonton, N. J. My collection, from Mr. Abbott.

There is a specimen in the collection of the Academy, apparently belonging to this species. Both are casts. The Academy's specimen, however, has a lithological character, entirely unknown to me, in the Cretaceous. It is from a light grey calcareous clay rock. I have been unable to see the impression of the hinge in that specimen. Mine shows the impressions of all of the cardinal teeth perfectly. There can be no doubt of the difference between this genus and *Cyprina*, to which it was referred by d'Orbigny. Dr. Morton's figure of the hinge (Synopsis, pl. 8) is correct for the right valve. That of the left valve is totally wrong. An examination of the figure will suffice to show that the two valves, as there represented, would not articulate. I have before me a drawing, which I made from the original specimen, in the collection of the Academy. Anteriorly, there is a large, flattened tooth, arising gradually in advance and ending abruptly, which articulated with the fosset, in advance of the two small, round teeth in the right valve. These, in turn, correspond to two small fossets on the left side. Behind these fossets there is a large, triangular pyramidal tooth, matching the fosset in the right valve (not well represented) between the two small and the long, narrow cardinal teeth; the latter is received in the left valve, between the pyramidal tooth and a corresponding tooth. There is also a long, lamellar, lateral tooth, placed posteriorly, but represented too near the edge in the figure of the left vale. The two figures in Dr. Morton's illustration were apparently taken from the right valve.

The present species is the most abrupt yet described. It is nearest *V. Conradi*, but differs in being higher, the beaks even more anterior; the basal margin straighter, the posterior edge by far less prominent and the transverse diameter proportionally much greater. From the cast, the surface does not seem to have possessed varices. It resembles, on its posterior face, some of the forms of *Cucullœa vulgaris*, but can be distinguished from that species by wanting the internal plates, and by the hinge being composed of a few very robust teeth.

ARCA Lam.

A. altirostris.—Small, robust, elongated, subquadrate. Beaks a little in advance of the centre, very prominent, distant and somewhat incurved. Basal margin regularly convex, posterior edge nearly straight, and most prominent at its lower portion. Surface markings unknown, a faint umbonal ridge extending from the beaks to the margin. Muscular scars distinct, but not prominent, posterior ones largest and most regular in shape. Pallial impression well marked. Hinge line curved on its inner margin.

Length, ·55 in. Width, ·65 in. Diameter, ·4 in.

Of nearly the same size as *Cibota multiradiata*, nobis, this species can be distinguished by the very prominent beaks, and less regularly gibbous form. The margin, which, in that species, is crenulated, does not seem to be in this, from an examination of the cast. The basal margin is closed in this species, and gaping in that.

It is more nearly related to *A. quindecemradiata*, but is much smaller, the beaks are much more prominent, proportionally, and it wants the distinct radiating lines, plainly visible on the casts of that species.

Locality, Crosswicks, N. J. My collection, from Dr. Slack.

CUCULLŒA Lam.

C. vulgaris *Morton.*—Synopsis, p. 64, pl. 3, fig. 8, and pl. 13, f. 5.

Under this name have been confounded several species, found in New Jersey. Having the good fortune to have access to Dr. Morton's types, I shall endeavor to separate them, a task which would be almost impossible, with only the meagre description and worse figures, given in the synopsis. The true *C. vulgaris* is characterized as follows:—

Shell gibbous, sub-triangular. Beaks anterior, prominent, remote. Hinge line short, straight externally, internally curved; teeth? Buccal margin broadly rounded, basal nearly straight; posterior angle produced. Umbonal ridge prominent, subangular; umbonal slopes almost at a right angle with the rest of the surface. Surface marked by distinct, irregular, concentric lines. Area impressed and marked by five or six angular lines. Muscular scars rather small. Pallial line very distinct.

The most obvious distinguishing characters of this species are the prominent, remote beaks, placed almost at the anterior extremity.

There is another form found with this, probably a variety, in which the umbonal ridge, instead of being straight, as in the typical specimens, is distinctly convex in the middle.

C. neglecta.—Shell subquadrate, more compressed than the preceding species. Beaks small, incurved, placed near each other, and almost one-third of the distance from the anterior end. Buccal extremity prominent, rounded. Anal margin nearly parallel with the buccal, and much less produced than in *C. vulgaris.* Basal margin broadly and pretty regularly convex. Area small, narrow. Internal plate long and narrow. Surface marked by numerous, rather small, radiating lines.

Length, 1 in. Width, 1·3 in. Diameter, ·8 in.

Found abundantly with the preceding. I have only seen casts.

This species approaches most nearly *C. Mailleana* (*Arca id.* d'Orb.,) but is much less ventricose, and the beaks are not half the distance apart. There is little or no resemblance between it and *C. vulgaris.*

C. transversa.—Shell very gibbous. Beaks large, prominent and very far apart, placed about a third of the distance from the buccal end. Area broad and very long. Posterior-basal angle prominent. Internal plate low and broad. Hinge nearly straight. Surface marked by numerous radiating lines.

Length, 1·4 in. Width, 1·8 in. Transverse diameter, 1.5 in.

One specimen in the collection of the Academy, presented by Mr. Harris, probably from Arneytown, N. J.

From the preceding species, this can be distinguished by the much deeper valves, more remote and prominent beaks and long hinge area. It is the most convex species in New Jersey, being more so, in proportion to its size, than *C. antrosa* Morton. The form will distinguish it from that species. It resembles somewhat *C. fibrosa* Lam., but is more convex on the basal margin, the beaks are larger and more remote, and the whole shell is somewhat more oblique. The hinge is longer than that species, as is also the width of the shell from buccal to anal margins. From *Arca quindecemradiata,* it can be distinguished by having probably twice the number of ribs, and by being more convex.

LITHOPHAGUS Muhlf. 1811.

Lithodomas Cuv. 1817.

L. Ripleyanus.—Tube subcylindrical, nearly straight, gradually tapering, broadest on the dorsal surface; opposite face narrow, rounded; extremity abrupt, rounded and faintly sub-trilobate. Shell subquadrate. Beaks terminal, and projecting beyond the buccal end of the shell, very much incurved, so as to appear somewhat spiral. Umbones broad, slightly flattened in the middle. Cardinal margin straight anteriorly, depressed posteriorly, merging into the anal border, which is subtruncate and most prominent above. Basal edge broadly emarginate. Surface marked by numerous, irregular, concentric lines.

Length, ·25 in. Width, ·55 in. Diameter, ·35 in.

Length of tube, ·9 in.

Not rare in the marls of New Jersey. I found one specimen, somewhat smaller than the above measurements, at the point where the West Jersey railroad crosses Big Timber Creek, between Gloucester and Red Bank, N. J., showing the shell, beautifully preserved. It is from the bed usually known as the "Ripley Group," discovered almost simultaneously in Mississippi, by Dr. Spillman, and Prof. Hilgard, the State geologist, and first recognized by me in New Jersey.

The shell resembles *L. Australis* nobis (*Lithodomus id.*, Synopsis Moll. of Cret., *Modiola id.*, Proc. Acad., 1860,) but is narrower, posteriorly, and the cardinal margin is more depressed.

L. affinis.—Tube robust, curved, short. Portion containing the shell broad, grooved at the anterior half of the back, rounded carinate the rest of its length. Opposite face more narrow and deeply grooved. Extremity distinctly trilobate. Shell unknown. From the shape of the tube, it appears related to the preceding species, but the beaks are less prominent in advance, the shell is much more gibbous, the basal margin more emarginate, and the posterior cardinal margin more depressed.

Length of tube (extending a little beyond the shell) ·6 in. Width (in the direction of the length of the shell) ·35 in. Transverse width ·4 in.

From the green marl of New Jersey. Exact locality unknown, probably Burlington county. Coll. Acad.

Although I have only seen the tube of this species, I do not hesitate in describing it. It is shorter, more robust and more distinctly marked by the form of the shell, than that of the preceding species, and is somewhat curved, a character I have never seen in *L. Ripleyanus*, after examining more than twenty specimens. The marks on the surface of the tube indicate a much shorter and more robust shell.

Ctenoides Klein, 1753.

Radula Klein, 1753; *Lima* Brug., 1792.

C. denticulicosta.—Shell oblique, inflated, thin; ears small. Surface marked by about twenty-eight angular ribs strongly crenulated on the crest, and occasionally with faint traces of supplementary ribs on their sides. Interspaces between the ribs angular, marked by strong lines of growth, which are more evident at the sides of the shell, at which points the ribs become smaller, and finally disappear, thus leaving about one-sixth of the surface at each side without ribs. Interior marked by grooves corresponding with the ribs on the surface.

Length, ·75 in. Greatest width, ·65 in. Depth of valve, ·3 in.

From the Cretaceous of Tennessee. My Coll. and Coll. Acad. From Prof. Safford, the State Geologist of that State.

This shell resembles *C. reticulata* nob. (*Lima id.* Lyell & Forbes,) but is a little more rounded, especially on the posterior side. It can be distinguished, however, by the ribs being larger, fewer in number, and strongly crenulate, as well as from the fact that, at both the anterior and posterior sides, the ribs disappear for about one-sixth the width of the shell. The umbones are somewhat smaller than in *C. reticulata*. From *C. crenulicosta*, it can be distinguished by the shape, being much more elongate, ribs smaller and more numerous, and in the latter species the whole surface is costate.

Pecten Linn.

P. tenuitesta.—Shell thin, orbicular, flattened; valves of about equal convexity. Ears unknown. Surface marked by about forty slender, rounded ribs of variable size, often showing a marked tendency to alternation of large and small ones. Interspaces between the ribs flat, and equal to, and sometimes wider, than the ribs. The surface, both of ribs and interspaces, is covered by very fine concentric lines placed close together, often hardly visible to the naked eye, and sometimes assuming the form of comparatively large imbrications. Interior of the shell marked by grooves corresponding with the external ribs.

This species occurs occasionally in the dark-blue marls of Burlington and adjoining counties, but I have never seen a whole shell. It seems to be of the form and size of *P. Burlingtonensis* nobis, but is sufficiently distinguished by the radiating ribs. The valves are about half an inch apart in the middle.

P. asper *Lam.*—There are two specimens of this species, in the Academy's Collection, among the American specimens. One purports to have come from Tennessee, the other is without a label. They may both be, however, European specimens, placed there by mistake. I mention the fact to call the attention of collectors to the matter.

OSTREA Linn.

O. pandæformis.—Subquadrate. Lower valve very convex, nearly pyramidal, most prominent in the centre, from which point the sides slope abruptly, the anterior half forming nearly a right angle with the line running from the beak to the crest. Laterally, the slope is not so great. Upper valve flat, for the first third of its length, then convexly curved downwards, the anterior half becoming deeply concave in the middle.

Holding the shell so that the beaks are furthest off, the right hand side is entire; the left side is emarginate towards the basal margin. Surface strongly imbricated, the surfaces of the layers being smooth; no costæ visible on the surface.

Length, 3 in. Width, 2·5 in. Greatest depth, 2 in.

Locality, "seven miles below Yazoo, Mississippi." My collection. From Dr. Janeway, U. S. A. Most probably cretaceous.

The irregular form of this shell makes it exceedingly difficult to describe. It resembles, remotely, some of the more regular forms of *O. panda* Morton, but can be distinguished by its much greater size, the deeper inferior valve, the entire absence of ribs, and the strongly imbricated surface. The growth of the shell has been a little oblique, making the striæ, especially of the upper valve, somewhat excentric. It wants entirely, however, the spiral form of Exogyra.

O. cretacea *Morton.*—Syn., p. 52, pl. 19, f. 3.

This species, described and figured from a specimen from the Eocene limestone of South Carolina, is said by Dr. Morton to occur in the "older cretaceous strata of Greene county, Alabama," and has been frequently quoted from other cretaceous localities. I have seen but one or two valves, of the so-called *O. cretacea*, from the cretaceous formation, and I consider them distinct. It is more oblique, and is usually somewhat curved. One specimen, found by myself at Mullica Hill, is quite thick, and resembles more nearly *O. robusta.* The true *O. cretacea* is nearly equilateral and subovoid.

O. panda *Morton.*—Syn. p. 51, pl. 3, fig. 6, exclus. pl. 19, fig. 10.

Dr. Morton also described two species under this name. I have before me full series of both. The cretaceous form, the one to which the name will have to apply, is, without exception, the most irregular oyster I have ever seen. It varies from crescentic to obliquely ovoid, subquadrate, oval or almost circular, and is marked by from two or three undulations or contortions to nearly twenty radiating ribs, which are sometimes smooth, and at others coarsely imbricated. The lower valve is usually attached, but, when free, is flat for a half or two-thirds of its length, and is then bent upwards at various angles, often nearly a right angle. The line at which the two valves meet is well defined. Hinge short, rounded, triangular, not very marked.

The shell is usually about an inch long. I have never seen one more than an inch and a half in length. Prof. Safford, State Geologist of Tennessee, sent me numerous species, from the " Ripley Group " of that State.

I shall name the Eocene species, in honor of Dr. Morton,

O. Mortonii *G.*, *O. panda* M. *pars.* Syn. pl. 10, fig. 10.

Shell oblique, triangular to subquadrate. Both valves strongly plicated. Lower valve, especially in young specimens, usually convex, deepest in the middle, but rarely bent abruptly, and then usually from having been encrusting. Hinge distinct, very oblique, and nearly as high as wide, with a distinct, medial depression. Placing the lower valve in its natural position, with the beak furthest off, the left basal angle is always most produced, the right side from the hinge to this angle being more or less regularly curved, and the left side nearly or quite straight. Surface marked by a slightly variable number of ribs, usually about eleven, one or two of which are often much larger than the others; the longest side being without ribs, except in very large specimens, when there will sometimes be found a dozen small supplementary ones. Upper valve nearly or quite flat, and always plicated as strongly as the lower ones, and in a corresponding manner. As the shell increases in size, the form and markings become less regular, sometimes the plications equalling in depth one-third of the length of the shell.

Dr. Morton's figure is a very accurate representative of the original, now before me. Another specimen from the same bed is 2·5 in. long. Width, 3 in. Diameter, 1·5 in. Greatest oblique width, 3·5 in.

Very common in the Eocene limestone of South Carolina, and in the same formation from Alabama.

Ostrea Vicksburgensis Cuv., can be distinguished from this species by its more regular form, deeper valves, and smooth, rounded ribs.

GRYPHÆA Lam.

G. Thirsæ.—Rounded-subtriangular. Lower valve; beak very small, and close to the hinge, never exsert. Umbone rounded, very prominent and somewhat compressed laterally, the rounded elevation continuing more or less regularly, becoming broader, to the middle of the basal margin, at which point this margin is always somewhat emarginate. Ligament area broad, triangular, transversely striate, and with a slight, irregular depression in the middle. Interior of valve very deep. Muscular impression nearly ovoid, narrowest on the inner end. External surface marked by a few small, irregular squamose ridges, most numerous and distinct directly behind the emargination of the base. Upper valve unknown.

The species resembles, remotely, some of the narrower forms of *G. vesicularis* Lam., but after comparing the series before me with numerous authentic specimens of that species, both American and European, some of the latter labelled by d'Orbigny and others, by Charlesworth, I am satisfied that they are distinct. The beak is so small as to be almost obsolete, and there is always a more or less distinct, rounded, umbonal ridge. In general form, it resembles *G.* (*Exogyra*) *columba*, but wants the spiral beak, and is never lobed. The small beak and absence of all traces of lobes will sufficiently separate it from *G. Pitcherii.*

The specimens are in the Museum of the Smithsonian Institute (No. 570), and are from a light gray sandy marl.

Locality, " Nanafalia," Alabama.

Length, 1.7 in. Greatest width, 1·3 in. Width at the hinge, ·6 in. Greatest height of valve, ·8 in. Height at the hinge, ·7 in. Length from the basal margin, over the umbone, to the beak, 2·3 in.

The measurements above were all taken from one specimen; they vary a little, but the shape and proportions are very nearly alike in all the specimens I have seen.

AMORPHOZOA.

EUDEA Lam.

?E. dichotoma.—Subcylindrical, often compressed or irregularly nodulated; dichotomous, flattened below each dichotomization; rarely approaching a massive form. Internal tube generally obliterated, but wide and distinct in one instance. Surface covered by numerous rounded pores placed close together, and a few large rounded, scattered depressions, probably representing the "*oscules*" described by Picket.

Common in the dark green marl of the second division of the Cretaceous, of the New Jersey Geologists. I found it abundantly in the marl pits of Hon. Nathan Stratton, near Mullica Hill, and in the same beds at Blackwoodstown, N. J.

The branches are rarely found in pieces of more than an inch and a half in length, are usually from a third to a half an inch thick, and are frequently dichotomous, though I have only in one instance found a mass of more than half a cubic inch in size. The surface is usually entirely destroyed, so that the form alone distinguishes them from accidental concretions. The discovery of undoubted pores in several specimens, however, indicate their organic origin, though I can only place it doubtfully in the above genus.

Catalogue of land and fresh water univalve MOLLUSKS collected in British America by Messrs. Ross, Kennicott and Drexler, and deposited in the Smithsonian Collection.

BY W. G. BINNEY.

From English River.

Helix arborea *Say.*
chersina *Say.*
striatella *Anthony.*
Bulimus harpa *Say.*
Achatina lubrica *Müll.*
Limnæa jugularis *Say.*
appressa *Say.*
ampla *Mighels.*
palustris *Lin.*
Physa heterostropha *Say.*
hypnorum *Lin.*
Planorbis trivolvis *Say.*

From Ft. Simpson, on Mackensie's River.

Succinea avara *Say.*
lineata *W. G. B. ?*
Limnæa appressa *Say.*
palustris *Lin.*
Planorbis trivolvis *Say.*
parvus *Say.*

From Fort Resolution, Slave Lake.

Succinea Haydeni *W. G. B.*, var. minor.
Physa hypnorum *Lin.*

From Hudson's Bay.

Limnæa appressa *Say.*
palustris *Lin.*
caperata *Say ?*

From James' Bay.

Succinea ovalis *Gld.*, non *Say ?*
Bulimus harpa *Say.*
Physa ——— ?
Planorbis armigerus *Say.*

From Moose Fort.

Limnæa ——— n. sp. ?

From Moose Factory.

Vitrina limpida *Gld.*
Succinea ovalis *Gld.* non *Say.*
obliqua *Say.*
Helix arborea *Say.*
striatella *Anthony.*
labyrinthica *Say.*
monodon *Rackett.*
young albolabris or thyroides.
Achatina lubrica *Müll.*
Limnæa palustris *Lin.*
appressa *Say.*
Physa heterostropha *Say.*
Planorbis bicarinatus *Say.*
parvus *Say.*
Amnicola lustrica *Say.*
porata *Say.*
limosa *Say.*
Valvata tricarinata *Say.*

Notes on the Terrestrial Mollusks of the Peninsula of California.

BY W. G. BINNEY.

Our knowledge of the air-breathing mollusks of Lower California is derived almost entirely from the labors of Mr. John Xantus. The specimens collected by him, and from which the following descriptions are drawn, are deposited in the collection of the Smithsonian Institution.

The South American type of Bulimus appears to prevail, while the presence of undoubted specimens of *B. proteus* and *pallidior* is an interesting fact in the study of geographical distribution.

Helix areolata Sowb. Cerros Island. (Dr. Veatch.)

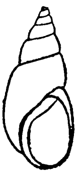
Helix Pandoræ Forbes. Margarita Island. (My cabinet.) San Juan ? (Forbes.)

Bulimus excelsus Gould. La Paz. (California Acad. Nat. Sc. coll.)

Bulimus vesicalis Gould. Lower California. (Gould.)

Bulimus pallidior Sowb. (*B. vegetus* Gould.)—Mr. Xantus found it at Cape San Lucas and 350 miles above. For an account of its habits see that of *B. inscendens* described below. It appears to inhabit the whole peninsula, as Carpenter quotes it from San Diego, and Gould at San Juan. It is found in very great quantities. Sowerby is undoubtedly wrong in giving "South Sea Islands" as locality. Pfeiffer gives S. America on Cumings' authority.

Bulimus proteus Brod. Cape San Lucas. (Xantus.)—One large specimen agreeing with the figure of Deshayes and Ferussac, pl. 139, figs. 1 and 2, and numerous immature ones, were collected by Mr. Xantus. The colored bands are longitudinal and not transverse as in Reeves' fig. 100, Con. Icon., which is also 8 mill. longer than Mr. Xantus' largest specimen. *B. proteus* is referred to the mountains of Peru by Pfeiffer.

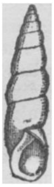


Bulimus Xantusi, n. s.—T. rimata; oblongo-ovata; calcarea; striis creberrimis flexuosis longitudinalibus et lineis minutis intercidentibus notata; sutura impressa; anfr. 5½ convexi, ultimus 5-7 long. testæ æquans; columella arcuata; apertura obliqua, ovalis; perist. simplex, acutum, marginibus approximatis, columellari reflexo; paries aperturalis callo tenui induta. Long. mill. 21, lat. 8. Ap. 10 longa, 6 lata.

Habitat promont. San Lucas, pæninsulæ Californiæ. Exempla 4 collegit J. Xantus.

Shell rimate, oblong-ovate; chalky-white; marked with numerous longitudinal wavy striæ and decussating minute revolving lines; suture impressed; whorls 5½, convex, the last 5-7ths the length of the shell; columella arched; aperture oblique, oval; perist. simple, sharp, its ends somewhat approaching, that of the columella reflected; the parietal wall of the aperture covered with a light callus.

The four specimens collected are very uniform in outline, size and markings. The peculiar wavy striæ and minute revolving lines are its chief characteristics.

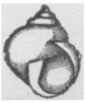


Bulimus artemisia, n. s.—T. rimata; subcylindrica, versus apicem obtusam, distinctè liratam attenuata; tenuis, diaphana, læviuscula, longitudinaliter vix rugosa; sutura impressa; anfr. 8, planiusculi, regulariter accrescentes, ultimus ½ long. testæ æquans; apertura obliqua, ovalis; perist. simplex, vix incrassatum, marginibus approximatis, callo crasso, exstante junctis, columellari dilatato.—Long. 23, diam. 6; ap. 7 long, 5 mill. lata.

Habitat ad promont. San Lucas, pæninsulæ Californiæ, in Artemisia degens. (J. Xantus.)

Shell rimate, subcylindrical, broadest at the second whorl, from which it gradually tapers towards the apex, which is obtuse, its first whorl and a half being bulbous, and marked by numerous strong longitudinal ribs; white; nearly transparent; the longitudinal wrinkles of growth scarcely roughening the almost smooth surface; suture distinct; whorls 8, flattened, regularly and gradually increasing, the last equalling one-half the whole length of the shell; aperture oblique, oval; peristome simple, hardly thickened, its terminations approached, and made continuous by a white, upright callus, the columellar portion expanded.

But one specimen was found on a small species of Artemisia at Cape San Lucas, Lower California by Mr. J. Xantus, and is preserved in the collection of the Smithsonian Institution.



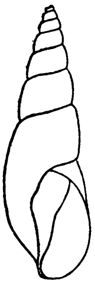
Bulimus pilula, n. s.—T. umbilicata, globosa, inflata; tenuis; longitudinaliter rugosa; calcarea; apex obtusa; anfr. 4 convexi, ultimus inflatus, long. testæ 10-11 æquans; columella simplex, arcuata; apertura obliqua, rotundata; perist. simplex, acutum, margine columellari dilatato. Long. mill. 22, lat. 7. Ap. 9 longa, 6 lata.

Habitat in pæninsula Californiæ, ad "Todos Santos Mission," et in insulâ "Marguerita." Saxa degens sub muscis. Specimina plurima collegit J. Xantus.

Shell globose, inflated; umbilicated; thin; with longitudinal wrinkles; chalk-colored; apex obtuse; whorls 4, convex, the last very inflated, equalling 10-11ths the length of the whole shell; columella simple, arched; aperture oblique, rounded; peristome simple, acute, its columellar end expanded so as partially to cover the umbilicus.

Mr. Xantus found many of this species during his stay on the peninsular, and is decidedly of the opinion that maturer specimens, if any existed, would have been noticed by him. It frequents rocky spots, living under mosses.

I can find no figure in Reeves' Monograph or description in Pfeiffer's works of any species at all approaching it in shape. *Bulimus sufflatus* Gould, from Lower California, of which I have seen a specimen, does not appear to be a more mature form of it. The measurements are taken from the largest individual. All the specimens are uniform in outline and other respects.



Bulimus inscendens, n. s.—T. rimata; acuminato-oblonga; tenuis; rufo-brunnea; striis incrementi et lineis minutis volventibus decussata, apice lirata; sutura mediocris; anfr. 7 convexi, ultimus 7-12 long. testæ æquans; apertura obliqua, oblongo-ovata, perist. simplex, acutum, ad columellam reflexum; paries aperturalis callo tenui induta. Long. mill. 36, lat. 10. Ap. 15 longa. 9 lata.

Habitat in montibus arenosis pæninsulæ Californiæ inter "Cape San Lucas" et "Margarita Bay," inscendens in arbores "Copal" dictas. (J. Xantus.)

Shell rimate; acuminately oblong; thin; reddish brown; decussated with striæ of growth and minute revolving lines, the apicial whorl and a half being ribbed; suture moderate; whorls 7, convex, the last 7-12ths the shell's length; aperture oblique, oblong-ovate; peristome simple, acute, reflected at the columella; a thin callus on the parietal wall of the aperture.

The description is drawn from the most perfect specimen, which is somewhat smaller and more cylindrical than some of the others. On first receiving a single specimen, I was inclined to refer it to *B. excelsus* Gld. A careful examination of the description of that species, however, and of a specimen lately received, convinces me of its being distinct. Its peculiar characteristic is the strongly ribbed, polished apicial whorls, differing from the decussated sculpturing of the remainder of the shell.

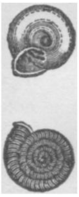
It was found in great numbers with *B. pallidior* Sowb., climbing high Copaiva trees, called "Copal" by the natives, on dry mountains 800 to 1000 feet high. It was never observed on the table lands or low lands. Mr. Xantus traced it from Cape St. Lucas some 350 miles up the coast.

PEDIPES LIRATA W. G. Binn. Cape San Lucas. (J. Xantus.)

Description of two new species of HELIX.

BY A. D. BROWN.

HELIX HUBBARDI. Figs. 1 and 2, mag. 5 diams.



T. umbilicatâ, depressâ, tenui, oblique striatulâ, basi striis obsoletis, corneo-rufescente; laminis 4, 2 parietalibus, superâ prominente, inferâ lineari, 2 in fundo anfractus ultimi; spirâ vix elevatâ; anfr. 4½—5, convexis, ultimo antice vix descendente; umbilico lato; aperturâ perobliquâ, subcircularis; perist. breviter reflexo, simplici.

Diam. maj. 2¼, alt. 1¼, mill.

Hab.—Prope Indianola, Calhoun Co., Texas. (E. W. Hubbard.)

Shell umbilicated, depressed, thin, obliquely striated, striæ upon the base obsolete, brownish horn color; laminæ 4, 2 upon the parietal wall, the upper one prominent, the lower very faint, 2 deep within the last whorl; spire slightly elevated; whorls 4½—5, convex, the last slightly descending; umbilicus wide; aperture very oblique, subcircular; peristome slightly reflected, simple.

Allied in shape to *H. pulchella* Mull., and in the parietal laminæ to *H. labyrinthica*, Say. From the former it differs in the presence of the laminæ, and in being striate; from the latter, in its more depressed form, wider umbilicus, finer striæ, and internal laminæ.

HELIX TRIZONALOIDES.

T. imperforatâ, globosâ, solidâ, oblique striatâ, (pallide corneâ)?, zonis 3-castaneis cingulatâ; spirâ elevatâ; anfr. 5, convexiusculis, ultimo pone labrum scrobiculato intus tuberculum formante; aperturâ perobliquâ, ovatâ, intus bidentatâ, dente altero ad marginem basalem, altero intra aperturam; perist. albo, late reflexo, umbilicum tegente.

Diam. maj. 21. min. 17, alt. 12, mill.

Hab.—Haiti?

Shell imperforate, globose, thick, obliquely striated, (pale horn color)?, encircled by three brown bands; spire elevated; whorls five, rather convex, the last furrowed behind the lip, forming a tubercle within; aperture very oblique, ovate, with two teeth, one on the basal margin, the other within the aperture; peristome white, widely reflected, covering the umbilicus.

Allied to *H. trizonalis*, Grat., and also in the peculiar arrangement of the teeth to *H. cepa*, Müll. From the former it differs, in having the umbilicus entirely closed; in the internal tubercle, which is stouter than in *trizonalis;* in the more elevated spire; in being heavier, and more coarsely striated. From *cepa*, it is readily distinguished by its more elevated spire, smaller size, and more oblique aperture.

I am in doubt as to the locality of this shell, but from the singular arrangement of the teeth, resembling both *trizonalis* and *cepa*, am disposed to refer it to Haiti.

A copy of the Proceedings for July and August was placed on the table.